

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

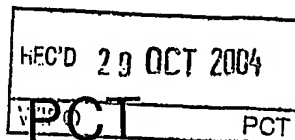
Applicant's or agent's file reference PHDE030241WO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/IB2004/051117	International filing date (<i>day/month/year</i>) 05 July 2004 (05.07.2004)	Priority date (<i>day/month/year</i>) 11 July 2003 (11.07.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	<p>This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

<p style="text-align: center;">The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 740 14 35</p>	<p>Date of issuance of this report 16 January 2006 (16.01.2006)</p> <hr/> <p>Authorized officer</p> <p style="text-align: center; font-weight: bold;">Idhir Britel</p> <p>Telephone No. +41 22 338 70 60</p>
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/B2004/051117

International filing date (day/month/year)
05.07.2004

Priority date (day/month/year)
11.07.2003

International Patent Classification (IPC) or both national classification and IPC
H01L23/58

Applicant
PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Corchia, A

Telephone No. +49 89 2399-7165



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/051117

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:

☐ a sequence listing

☐ table(s) related to the sequence listing
 - b. format of material:

☐ in written format

☐ in computer readable form
 - c. time of filing/furnishing:

☐ contained in the international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/051117

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4-6,9-13
	No: Claims	1-3,7,8,14
Inventive step (IS)	Yes: Claims	
	No: Claims	4-6,9-13
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43*bis*.1 and 70.10)

and /or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

see form 210

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following document:

D1: WO 02/43147 A (JANKE MARCUS ; INFINEON TECHNOLOGIES AG (DE))
30 May 2002 (2002-05-30)

The attention of the applicant is also drawn to the following document:

D2: WO 2004/038800 A (BAUKUS JAMES P ; CHOW LAP-WAI (US); YANG PAUL OU (US); CLARK WILLIAM M) 6 May 2004 (2004-05-06); international filing date 16 October 2003 (16.10.2003);
priority date 21 October 2002 (21.10.2002), 14 October 2003 (14.10.2003)

which claims a priority date earlier than the priority date of the present application but has been published later. This patent application is not considered as part of the prior art for the purpose of international preliminary examination. However, this application may be relevant to the determination of novelty and inventive step by designated or elected Offices (cf. Rules 64.3 and 70.10 PCT and PCT Guidelines, paragraphs 11.08, 11.09, 17.44).

2. Independent claim 1

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document):

A security-sensitive semiconductor product, particularly a smart-card chip (cf. page 1 line 12), in which not only are produced electrically active structures (transistors T1, T2, T3 and interconnects 20, 21, 22) envisaged by the chip design in the form of circuit functions (CMOS inverter, cf. page 6 lines 20-23) in and on a wafer (9), which may for example be composed of silicon, but also additional, electrically conductive parts (30-33), which are insulated from one another, are

generated as filling structures (cf. page 7 lines 20-36), characterised in that the parts of the filling structures that are generated are combined with contacts in such a way that additional circuit functions are generated (cf. page 7 lines 24-28) as well as the circuit structures that are produced for the circuits (transistors T1,T2,T3 and interconnects 20,21,22).

3. Dependent claims 2-14

Dependent claims **2-14** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step, as explained below.

- 3.1 As in claim **2**, the "filling" parts in the integrated circuit of D1 are composed of metal (cf. interconnects 30-33 in Fig.1b) or of diffused regions (cf. transistor T4 in Fig.1b).
- 3.2 The interconnects and their inter-layer connections of D1 are set by a computational filling program by taking into account the protective circuit functions to be implemented (cf. page 7 lines 24-31), as in claims **3** or **5**. For these reasons, the subject-matter of claim **6** and **7** (cf. page 8 line 34 onwards) is also considered not inventive over the design procedure of D1.
- 3.3 As in claim **8**, the "filling" structures of the integrated circuit of D1 are electrically connected to electronic components, such as transistor T4 in fig.1b, and a signal is applied to them by evaluation and/or drive devices (cf. page 7 line 36 to page 8 line 6), so that closed signal paths are formed as in claim **4**. For the same reasons, the application of signals such as the power supply or ground potential to the "filling" structures, as in claims **9,10** or **12**, appears not inventive over the arrangement of D1.
- 3.4 The circuit arrangement of claims **11** and **13** is analogous to the evaluation circuit implemented in D1 (cf. page 7 line 36 to page 8 line 4) and is therefore considered not inventive.
- 3.5 As explained in more detail in the following section (see 4.2), claim **14** does not clearly define any further limitation on the technical features of the semiconductor product of claim **12**, to which it refers. It is worth noting,

however, that even the limitations on a method of impeding unauthorised access to the circuit of this product, as set out in claim 14, are already known from D1 (cf. page 3 line 37 to page 4 line 10).

4. Further remarks

- 4.1 The description of the features of the filling structures in claim 1 is confusing and makes the subject-matter of this claim unclear (Article 6 PCT). The additional conductive parts, generated as filling structures, are described as being "insulated from one another" but also "combined with contacts". As far as the claim can be understood in light of the description (cf. page 2 lines 6-21), these contrasting features refer to different steps in the design of these structures, which are initially generated by a filling program as separated elements and then connected by contacts in order to design a closed signal path. However, since these steps and corresponding features refer to the design procedure of the semiconductor integrated device, rather than to the actual finished semiconductor product, the intended limitations in claim 1 are not clear.

For the sake of the present examination, the subject-matter of claim 1 has been interpreted by considering only the features of the finished semiconductor product.

- 4.2 The features in the apparatus claim 14 relate to a method of impeding unauthorised optical tracing of the electronic circuit of the semiconductor product rather than clearly defining the semiconductor product itself in terms of its technical features, namely the actual size and position of the interlinked parts of the fill structures. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.
- 4.3 According to the requirements of Rule 10.2 PCT, the terminology shall be consistent throughout the application. This requirement is not met in view of the use of different expressions used for describing the same feature (see "additional conductive parts" in claim 1, "filling structures" in claim 2, "passive fill structures" in claim 4, "fill structures" in claims 6-14).
- 4.4 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IB2004/051117

art disclosed in the document D1 is not mentioned in the description, nor is
this document identified therein.